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"A Study of Computational Techniques Related to Prediction
of
Centriods of Dosage Beyond Measured Time T_n
Where n is Known"

Final Report
by

Dr. Lou Allen Bell-Gray

May 22, 1985

U.S. Army Research Office

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Jackson State University
Jackson, Ms. 39217

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It is the general consensus of the scientific community, that dosage effect beyond some designated time T_0 ^{sub n} is frequently not known. It was the contention of this investigator that probabilities could be developed using Cauchy type integrals on closed contours. For to deal with dosage effects, we must realize that the function resulting during T_{n+1} ^{sub(n+1)} may be non-periodic. The question as to what to base reaction prediction in relation to a given time interval was examined from the original viewpoint of the investigator.

Problem Statement

What technique should be employed in order to predict the development of centroids with respect to a dosage or medical phenomena having certain traits designated by the researcher?

Summary of Results

Based on the literature read, there was evidence given which indicated Cauchy distributions had no moments. A lack of moments did not provide means for identification of centroids. Also, based on the literature, clustering methods are the best procedure for analyzing data for the original purpose of the research project. To do cluster analysis, it is generally recommended that a metric be developed. The metrics most frequently recommended are the Minkowski metric, absolute or city block metric or L_1 -norm metric, or Euclidean metric or L_2 -norm metric.

BIBLIOGRAPHY

- Blum, Julius R., Rosenblatt, Judah. Probability and Statistics, W. B. Saunders Co., 1972.
- Boas, R.P. The American Mathematical Monthly, Vol. 88, No. 3, March, 1981.
- Bradley, James V. Distribution Free Statistical Tests. Prentice-Hall, Inc. Englewood Cliffs, N.J., 1968
- Collins, Royal Eugene, Mathematical Methods for Physicists and Engineers. Reinhold Book Corporation, 1968.
- Conover, W.J. Practical Nonparametric Statistics. John Wiley and Sons, N.Y., 1971.
- Constantinescu, F., Distributions and their Applications in Physics Pergamon Press Ltd., 1980
- Derman, Cyrus, Gleser, Leon J., Olkin, Ingram, A Guide to Probability Theory and Application, Holt, Rinehart and Winston, Inc., 1973.
- Finney, D.J. Statistical Method in Biological Assay. 2nd ed. Charles Griffin and Co. Limited, London, 1964.
- Folland, G. B. and Kohn, J. J., The Neumann Problem for the Cauchy-Riemann Complex, Princeton University Press, 1972.
- Gakhov, F.D., Boundary Value Problems. Addison-Wesley, Reading, Mass., 1966.
- Ghosh, B.K. Sequential Tests of Statistical Hypotheses. Addison-Wesley, Reading, Mass., 1970.
- Kenney, J.F. and Keeping, E.S. Mathematics of Statistics- Part One. D. Van Nostrand Co., Inc., 1954.
- Korn, Granino and Korn, Theresa M. Mathematical Handbook for Scientists and Engineers, 2nd edition, McGraw-Hill, N.Y., 1968.
- Puri, Lal Madan and Sen, Pranub Kumar. Nonparametric Methods in Multivariate Analysis. John Wiley and Son, N.Y., 1971.
- Stakgold, Ivar, Joseph, Daniel, Sattinger, David., Nonlinear Problems in the Physical Sciences and Biology, Springer-Verlag, 1973.

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